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AMSAT NEWS SERVICE
ANS-158

The AMSAT News Service bulletins are a free, weekly news and information service of AMSAT North America, The Radio Amateur Satellite Corporation. ANS publishes news related to Amateur Radio in Space including reports on the activities of a worldwide group of Amateur Radio operators who share an active interest in designing, building, launching and communicating through analog and digital Amateur Radio satellites.

The news feed on http://www.amsat.org publishes news of Amateur Radio in Space as soon as our volunteers can post it.

Please send any amateur satellite news or reports to:
ans-editor at amsat.org.

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ANS-158 AMSAT News Service Weekly Bulletins

AMSAT News Service Bulletin 158.01
 >From AMSAT HQ KENSINGTON, MD.
DATE June 7, 2015
To All RADIO AMATEURS
BID: $ANS-158.01

OSCAR Numbers Assigned for BRICsat (NO-83) and PSAT (NO-84)

The following message has been sent to Bob Bruninga, WB4APR and the team at the
US Naval Academy.

"Bob:

You have requested OSCAR numbers for BRICsat and PSAT built by you and your associates at the U.S. Naval Academy.

From everything I can determine, these satellites meet all of the requirements
for OSCAR designations.

Therefore, by the authority vested in me by the AMSAT-NA President, I hereby confer the designation, Naval Academy OSCAR 83 on BRICsat amd Naval Academy OSCAR 84 on PSAT These designations can, of course, for convenience, be shortened to NO-83 and NO-84.

I, and the entire amateur satellite community, hope for successful missions for both NO-83 and NO-84 and congratulate you and the rest of the Naval Academy
team who designed, built and tested these two OSCAR spacecraft.

73,
William A. (Bill) Tynan, W3XO
OSCAR Number Administrator"

NO-84 PSAT, a student satellite project named in honor of USNA alum Bradford Parkinson, of GPS fame, contains an APRS transponder for relaying remote telemetry, sensor, and user data from remote users and Amateur Radio environmental experiments or other data sources back to Amateur Radio experimenters via a global network of Internet-linked ground stations.

PSAT is another APRS satelliite that can digipeat user packets just like the original PCSAT (NO44) and the packet system on the ISS. PSAT also supports the
same digipeating alias of ARISS so that users do not have to change any parameters when using any of these three APRS transponders.

see
http://www.aprs.org/psat.html

NO-83 BRICsat-P (Ballistic Reinforced Communication Satellite) is a low cost 1.5U CubeSat built by the US Naval Academy Satellite Lab in collaboration with
George Washington University, that will demonstrate on-orbit operation of a Micro-Cathode Arc Thruster (µCAT) electric propulsion system and carries an Amateur communication payload.

see
http://space.skyrocket.de/doc_sdat/bricsat-p.htm

Frequencies
PSAT: 145.825 – 1200 baud AX.25 telemetry – digi off
PSAT PSK31-5: 435.350 FM down, 28.120 SSB PK31 uplink – Brno University Transponder

BRICsat: 437.975 – 9600 baud telemetry evry 20s
BRICsat PSK31-6 – same as PSAT but PSK TLM on 375 Hz (PSAT on 315 Hz)

[ANS thanks Bill Tynan, W3XO for the above information]

2015 AMSAT-NA Board of Directors Nominations Notice

It is time to submit nominations for the upcoming AMSAT-NA Board of Directors election. Four director's terms expire this year: Barry Baines,

WD4ASW, Alan Biddle, WA4SCA, Mark Hammond, N8MH, and Jerry Buxton, N0JY. In addition, up to two Alternates may be elected for one year terms.

A valid nomination requires either one Member Society or five current individual members in good standing to nominate an AMSAT-NA member for Director. Written nominations, consisting of the nominee's name and call, and the nominating individual's names, calls and individual signatures should be mailed to: AMSAT-NA, 10605 Concord St, #304 Kensington, MD 20895-2526.

In addition to traditional submissions of written nominations, which is the preferred method, the intent to nominate someone may be made by electronic means. These include e-mail, Fax, or electronic image of a petition. Electronic petitions should be sent to MARTHA(a)AMSAT.ORG or Faxed to (301) 822-4371.

No matter what means is used, petitions MUST arrive no later than June 15th at the AMSAT-NA office. If the nomination is a traditional written nomination, no other action is required. If it is other than this, i.e. electronic, a verifying traditional written petition MUST be received at the AMSAT-NA office at the above address within 7 days following the close of nominations on June 15th. ELECTRONIC SUBMISSIONS WITHOUT THIS SECOND, WRITTEN VERIFICATION ARE NOT VALID UNDER THE EXISTING AMSAT-NA BYLAWS.

[ANS thanks Alan Biddle, WA4SCA, AMSAT-NA Corporate Secretary for the above information]

May/June 2015 AMSAT Journal is Complete

The May/June 2015 AMSAT Journal is complete and has been sent to the print shop. The AMSAT Journal is a key membership benefit, mailed to all members six times a year. If you are a member of AMSAT look for your copy to arrive in your mailbox within a few weeks.

In this issue you will find ...

+ The Apogee View column by AMSAT President Barry Baines, WD4ASW
+ AMSAT-NA Opportunity for Ride-share to Geosynchronous Orbit
+ Fox-1A on the Road to Vandenberg
+ Getting on the Air With Fox-1A
+ Minutes of the AMSAT-NA Board of Directors Teleconference
  by AMSAT Corporate Secretary, Alan Biddle, WA4SCA
+ CNCTRK - A LinuxCNC Based Satellite Tracking System
  by Bob Freeman, KI4SBL
+ US Naval Academy Launches PSAT, BRICsat, and USS Langley
  Cubesats by Bob Bruninga, WB4APR
+ Extreme DXing on FO-29 with a Portable Station
  by Hector Martinez, CO6CBF/W5CBF
+ Radio Amateurs invited to test APRS on Duchifat-1
+ Planetary Society Lightsail Launched
+ CAMSAT Press Release: Multiple Amateur Satellite Launch in July
+ AMSAT Activities at Greater Houston Hamfest 2015
  by Allen Mattis, N5AFV -and- Andy MacAllister, W5ACM
+ Monitoring Satellites Outside the Amateur Bands by Alex

Thanks to all who contributed to this issue and to the AMSAT Journa; editorial team: Bernhard, VA6BMJ; Douglas, KA2UPW/5; James, K3JPH; and Joe, KB6IGK.

Please send your articles, photos, reports of operating activities
to k9jkm(a)amsat.org. See
http://www.amsat.org/?page_id=1709
for anauthor's guide. The Journal editors will be happy to work with you
to get into print!

[ANS thanks the AMSAT Journal editorial team for the above information]

Fox 1C Engineering Model Update Video

A video update on Fox 1C Engineering Model from Fox Labs, Texas.

https://www.youtube.com/watch?v=Mdx3AqMUTO4&feature=youtu.be

[ANS thanks Jerry, N0JY, AMSAT Vice President for Engineering for the above information]

Program for SA AMSAT Symposium Announced

The program has been announced for the SA AMSAT Space Symposium 2015. The Symposium will be on June 20, 2015 at the Innovation Centre, Pretoria, South Africa.

See http://www.amsatsa.org.za/ for full details of the Symposium.

Speakers include:

+ Make Satellites your next journey into Amateur Radio
  Hans van de Groenendaal, ZS6AKV, President SA AMSAT

+ Keynote address - South Africa's contribution to space operations
  Raoul C Hodges, Managing Director, SANSA Space Operations

+ Gossamer sails for satellite deorbiting
  Lourens Visagie, ADCS Functional Area Engineer
  Space Advisory Company

+ ZACube-2: The successor to Africa's first nanosatellite.
  Danie de Villiers, Creative Technologist MTech/MSc Electronic
  Engineering CPUT

  The satellite will serve as technology demonstrator for essential
  subsystems and form the basis on which an innovative Software
  Defined Radio platform will be developed as primary payload.
  Secondary payload includes imaging capbilities

+ ZS6SRC - BACAR programme - Stimulating Science, Technology,
  Engineering and Mathematics with high performance learners.
  Christo Kriek ZR6LJK

+ KLETSKOUS -getting Africa into space

Hannes Coetzee ZS6BZP, KLETSKOUS Project leader

+ Kletskous Space frame - From concept to experimental model
Deon Coetzee ZR1DX

+ Methods to increase the strength-to-weight ratio
of a cube-satellite
Johannes Francois Oberholzer
Stellenbosch University: Industrial Engineering Department

+ KLETSKOUS power unit - From concept to first prototype -
Fritz Sutherland Jnr ZS6FSJ, Kletskous team

+ KLETSKOUS Communication Data Structure
Brian Mckenzie ZS6BMN, Kletskous team

+ Second Proto type of the Transponder
Jacques Roux ZR1ADC, Kletskous team

+ Development of ground control at VUT - B.Tech laboratory upgrade
Riaan Greeff, ZS4PR, Vaal University of Technology

The presentations will be followed by the Annual General Meeting.

[ANS thanks SA AMSAT for the above information]

Call For Papers: 2015 ARRL/TAPR Digital Communications Conference

We're soliciting technical papers for presentation at the 34th Annual ARRL/TAPR Digital Communications Conference, to be held October 9-11 in Chicago, Illinois. Papers will also be published in the Conference Proceedings.
You do not have to attend the conference to have your paper included in the Proceedings. The submission deadline is August 17, 2015.

E-mail your submission to Maty Weinberg at ARRL Headquarters at maty(a)arrl.org<mailto:maty(a)arrl.org>
Please to do not send zip files as these will be rejected by our e-mail server.

[ANS thanks ARRL and TAPR for the above information]

Sailboat Expedition to Grid DM02 Begins June 10

Bud, N7CW; Jim, K6ZH; and Phil, N0KE, plan to activate Grid DM02 from a sailboat expedition to the waters near San Clemente Island off of the southern California coast. Departure from San Diego will be on Wednesday, June 10 aboard a 49' sailboat. The team plans to be on the air sometime late Wednesday, through sometime on Sunday, June 14, including most of the VHF contest. Unfortunately, they have to leave before the end of the contest because the Navy has scheduled exercises in the area on Monday.

Activity includes 6 M, 2 M, probably 432, 1296 and satellites. Phil is responsible for everything other than 6 M. They plan to look for meteor scatter every morning and perhaps the evenings, unless there is Es. Since there is no cell service they will be in contact with pilot stations on 2 M FM in order to announce ourselves on Ping Jockey. If you don't use meteor scatter, it's not too late to learn! Otherwise you will have to listen for a very short (distance) Es opening or backscatter or some other nearly impossible propagation mode.

The expedition will be running about 500 W and a 3 el yagi (due to constraints from having to mount the antenna on a sailboat). They will use the call K6ZH. Watch for packet spots announcing their transmit frequency.

[ANS thanks Bud, N7CW and Patrick, WD9EWK for the above information]

AMSAT Will be at Ham-Com 2015

If you're going to Ham-Com 2015 at the Irving Convention Center in the Dallas - Ft. Worth area on June 12 to 13 look for AMSAT in booth #103. Also, check the Ham-Com program for the presentation by Clayton Coleman W5PFG. Clayton is an active member of AMSAT and the ARRL with a passion for Amateur Radio in Space. Having activated over 100 grid squares, Clayton enjoys helping others learn how to use minimal equipment
to enjoy our fleet of OSCAR's.

[ANS thanks Ham-Com for the above information]

AMSAT Events

Information about AMSAT activities at other important events around the country. Examples of these events are radio club meetings where AMSAT Area Coordinators give presentations, demonstrations of working amateur satellites, and hamfests with an AMSAT presence (a table with AMSAT literature and merchandise, sometimes also with presentations, forums, and/or demonstrations).

*Friday and Saturday, 12-13 June 2015 – HAM-COM in Irving TX (west of Dallas)

*Thursday, 9 July 2015 – presentation for the Escondido Amateur Radio Society in Escondido CA

*Friday and Saturday, 7-8 August 2015 – Austin Summerfest in Austin TX

*Saturday and Sunday, 22-23 August 2015 – Boxboro Hamfest and ARRL New England Convention in Boxborough MA

*Friday, Saturday, and Sunday, October 16-18 2015, AMSAT Symposium in Dayton OH (Dayton Crown Plaza)

[ANS thanks AMSAT-NA for the above information]

ARISS News

Upcoming ARISS Contacts

It is unlikely that there will be any contacts with the Columbus module station until after a crew change, which will probably occur in late June or July.

Watch
http://www.ariss.org/upcoming-contacts.html
for information about upcoming contacts as they are scheduled.

[ANS thanks ARISS, and Charlie, AJ9N for the above information]

Satellite Shorts From All Over

* LightSail Drama Continues as Spacecraft Wakes for Second Time

LightSail is back in business, following the second extended outage of the test spacecraft’s mission. The CubeSat checked in at 2:21 p.m. EDT (18:21 UTC)
Saturday for the first time since Wednesday afternoon. Over the course of two
overflights, 23 beacon telemetry packets were received by the spacecraft's Cal
Poly San Luis Obispo ground station.

A rapid sail deployment was briefly considered, but with battery levels still
unsteady and just one ground pass remaining before an eight-and-a-half hour outage, the team scrapped the idea. When LightSail came around the Earth again,
telemetry showed its batteries were charging—the first time since solar panel
deployment three days ago.

If battery levels continue to trend stably during Sunday’s early morning ground station passes, sail deployment will be scheduled for 2:02 p.m. EDT (18:02 UTC).

Engineers have been working to narrow down the reason LightSail’s batteries tripped into a safe mode-like condition following solar panel deployment. Before this afternoon's signal acquisition, the leading theory was that the spacecraft was stuck in a loop where power levels were too low in Earth's shadow, but too high in sunlight. This power ping-pong could have prevented the
batteries from reattaching their circuits to the spacecraft and allowing normal
operations to resume. The analysis is still ongoing.

{ANS thanks the Planetary Society's Jason Davis for the above information]

* Goddard Technologist Advances CubeSat Concept for Planetary Exploration

Although scientists are increasingly using pint-size satellites sometimes no larger than a loaf of bread to gather data from low-Earth orbit, they have yet to apply the less-expensive small-satellite technology to observe physical phenomena far from terra firma.

Jaime Esper, a technologist at NASA's Goddard Space Flight Center in Greenbelt, Maryland, however, is advancing a CubeSat concept that would give scientists that capability.

Dubbed the CubeSat Application for Planetary Entry Missions (CAPE), the concept involves the development of two modules: a service module that would propel the spacecraft to its celestial target and a separate planetary entry probe that could survive a rapid dive through the atmosphere of an extraterrestrial planet, all while reliably transmitting scientific and engineering data.

Esper and his team are planning to test the stability of a prototype entry vehicle -the Micro-Reentry Capsule (MIRCA) - this summer during a high-altitude balloon mission from Fort Sumner, New Mexico.

'Like No Other CubeSat Mission'
"The CAPE/MIRCA concept is like no other CubeSat mission," Esper said. "It goes the extra step in delivering a complete spacecraft for carrying out scientific investigations. We are the only researchers working on a concept like this."

Under his concept, the CAPE/MIRCA spacecraft, including the service module and entry probe, would weigh less than 11 pounds (4.9 kilograms) and measure no more than 4 inches (10.1 centimeters) on a side. After being ejected from a canister housed by its mother ship, the tiny spacecraft would unfurl its miniaturized solar panels or operate on internal battery power to begin its journey to another planetary body.

Once it reached its destination, the sensor-loaded entry vehicle would separate from its service module and begin its descent through the target's atmosphere. It would communicate atmospheric pressure, temperature, and composition data to the mother ship, which then would transmit the information back to Earth.

The beauty of CubeSats is their versatility. Because they are relatively inexpensive to build and deploy, scientists could conceivably launch multiple spacecraft for multi-point sampling - a capability currently not available with single planetary probes that are the NASA norm today.

Esper would equip the MIRCA craft with accelerometers, gyros, thermal and pressure sensors, and radiometers, which measure specific gases; however, scientists could tailor the instrument package depending on the targets, Esper said.

A Balloon Flight is designed to test stability.
The first step in realizing the concept is demonstrating a prototype of the MIRCA design during a balloon mission this summer. According to the plan, the

capsule, manufactured at NASA's Wallops Flight Facility on Virginia's Eastern
Shore, would be dropped from the balloon gondola at an altitude of about 18.6
miles (30 kilometers) to test the design's aerodynamic stability and
operational concept. During its free fall, MIRCA is expected to reach speeds of
up to Mach 1, roughly the speed of sound.

"If I can demonstrate the entry vehicle, I then could attract potential
partners to provide the rest of the vehicle," Esper said, referring to the
service module, including propulsion and attitude-control subsystems. He added
that the concept might be particularly attractive to universities and
researchers with limited resources.

In addition to the balloon flight, Esper said he would like to drop the entry
vehicle from the International Space Station perhaps as early as 2016 - a test
that would expose the capsule to spaceflight and reentry heating conditions and
further advance its technology-readiness level.

"The balloon drop of MIRCA will in itself mark the first time a CubeSat
planetary entry capsule is flight tested, not only at Goddard, but anywhere
else in the world," he said. "That in turn enables new opportunities in
planetary exploration not available to date, and represents a game-changing
opportunity for Goddard."

http://www.spacedaily.com/reports/The_CAPEd_Crusader_Goddard_Technologist_
Advances_CubeSat_Concept_for_Planetary_Exploration_999.html

[ANS thanks NASA Goddard, and Spacedaily.com for the above information]

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In addition to regular membership, AMSAT offers membership in the
President's Club. Members of the President's Club, as sustaining
donors to AMSAT Project Funds, will be eligible to receive addi-
tional benefits. Application forms are available from the AMSAT
Office.

Primary and secondary school students are eligible for membership
at one-half the standard yearly rate. Post-secondary school students
enrolled in at least half time status shall be eligible for the stu-
dent rate for a maximum of 6 post-secondary years in this status.
Contact Martha at the AMSAT Office for additional student membership
information.

73,
This week's ANS Editor,
Joe Spier, K6WAO
k6wao at amsat dot org